

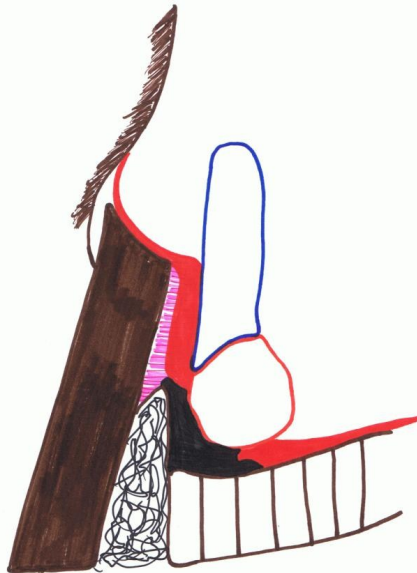
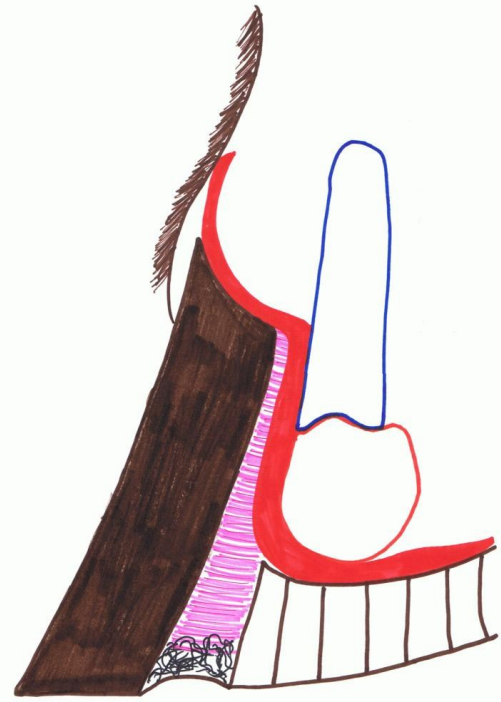


White Line Separation

White line separation is also known in conventional circles as "White Line disease" or "Seedy Toe".

Just like with all the other problems, the answer for the repair of white line separation is the same: Remove the cause and restore physiological hoof form.

The cause of white line separation is not fungus or bacteria. Fungus and bacteria are always present around the hoof, but they cannot manifest in a healthy hoof. Only when hoof mechanism, mechanical overstressing or dehydration decrease the quality and quantity of the hoof horn can white line separation take place.



When there is not enough healthy horn growing, fungi and bacteria can establish themselves and will eat away on the inferior horn. They will penetrate further upward and eventually destroy the laminar horn and corium, which then will die off.

Gravel can also not penetrate the white line if there is enough quantity and a good quality of hoof horn produced. Occasionally there will be a bit embedded gravel in the beginning of the white line, especially if the hoof is overall left too

long (below), or there was insufficient exposure to water.



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Lack of water may become a reason for white line separation. The laminar horn requires a lot of water and without being replenished on a daily basis, it will dry out and recede.

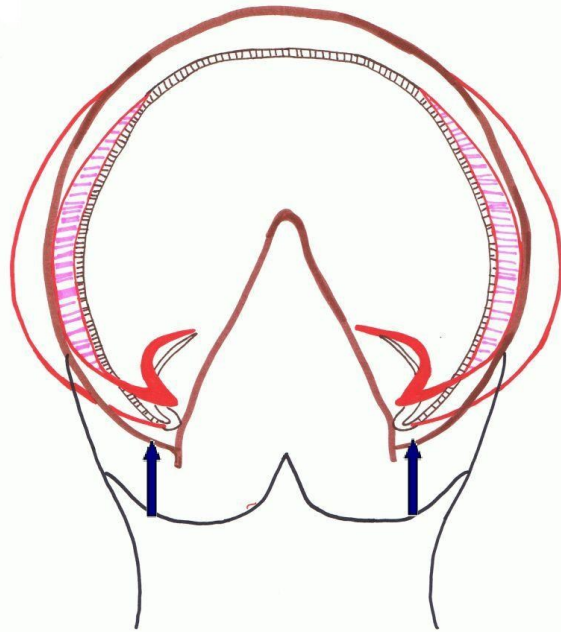
Bedding dries the white line out, ammonium and bacteria can then enter the spaces between the shrunken lamellae. The ammonium raises the pH level and compromises the acidic shield usually found on the outside of the body.



Terrain that is too soft to produce hoof mechanism, will result in a lack of horn production. Soft pasture for hard hoofed horses represents a problem here. The coronary bulge is tougher in hard hoofed animals and does not receive sufficient force on soft ground to expel the blood completely in the coronary venous plexus. Circulation and therefore hoof production are reduced. The white line grows down too slow and will be destroyed more easily.



In hooves with high heels white line separation often occurs in the lateral walls. The high and/or contracted heels lead to separation due to forces from the heel area. (Schematic below and picture right)



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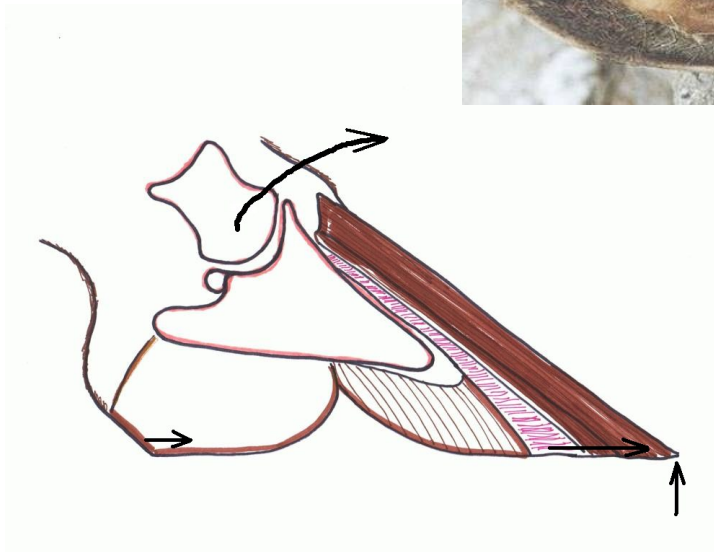
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Below and right: Excessive toe length causes white line separation due to forces on breakover





In a contracted hoof the laminar corium is often under permanent pressure, leading to inferior white line production and excessive white line separation



Shoeing speeds up white line separation due to reduced circulation, vibrations, unnatural forces etc. Picture on left: Shoe removed

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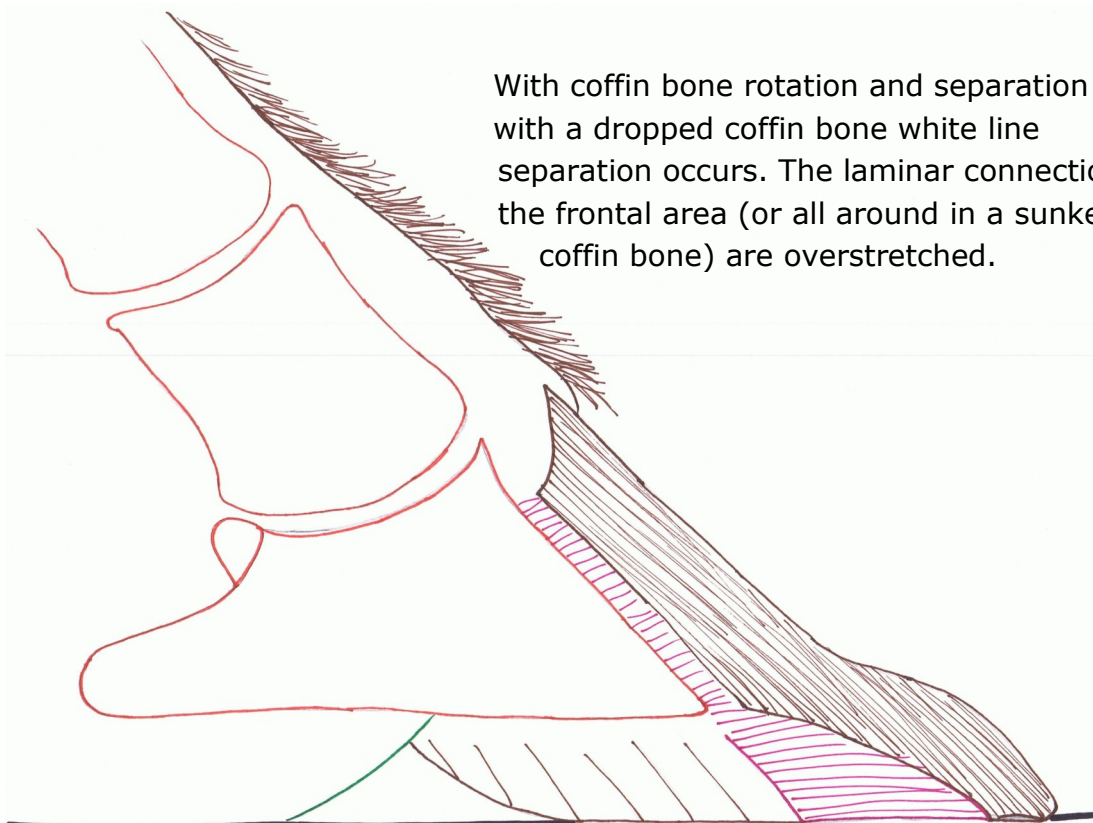
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With coffin bone rotation and separation or with a dropped coffin bone white line separation occurs. The laminar connection in the frontal area (or all around in a sunken coffin bone) are overstretched.





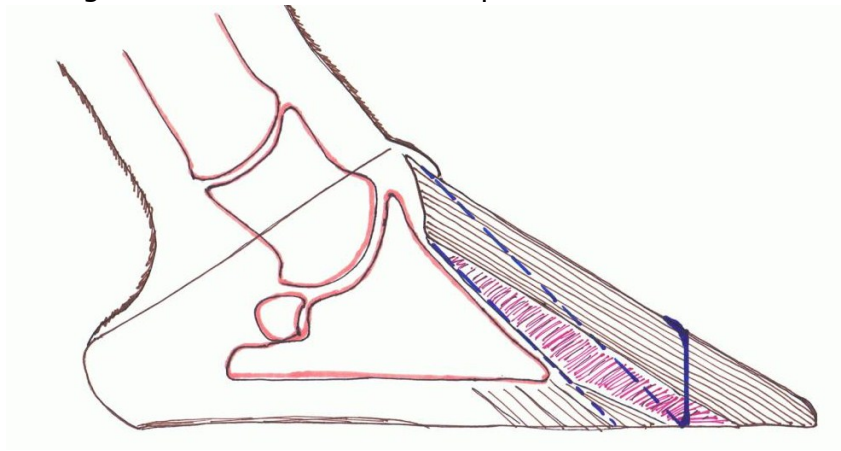
During rehabilitation of a contracted hoof, white line separation may happen. During the opening of contraction, the wall pulls away from the coffin bone in the lateral regions and it takes time for the bone to rebuild to its original shape. Discoloration of the white line is often visible.



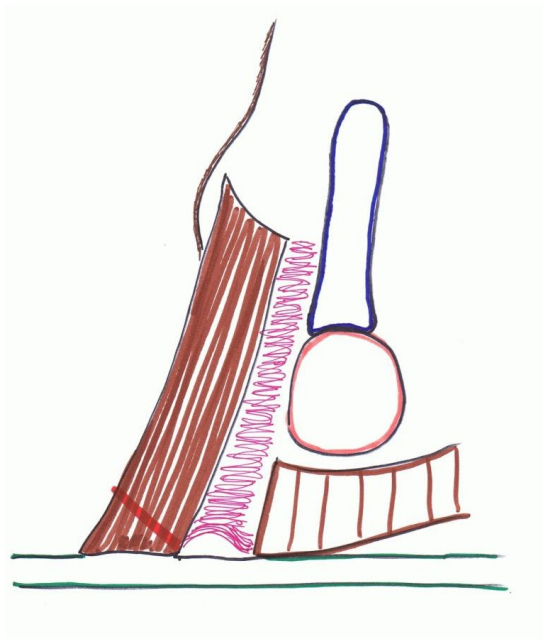
The picture you see here is the result of actually opening the hoof up too fast. With a little more cautious trimming, the cracking of the skin in the bulb region could have (and should have) been prevented.

Trimming for White Line Separation

A long toe lever needs to be rasped back to the correct 105° or 95° angle.



In the lateral walls the separation is counteracted by a 45° bevel. This causes the wall to be pushed back upon weight bearing, especially on softer ground. The wall does no longer act as a lever away from the coffin bone.

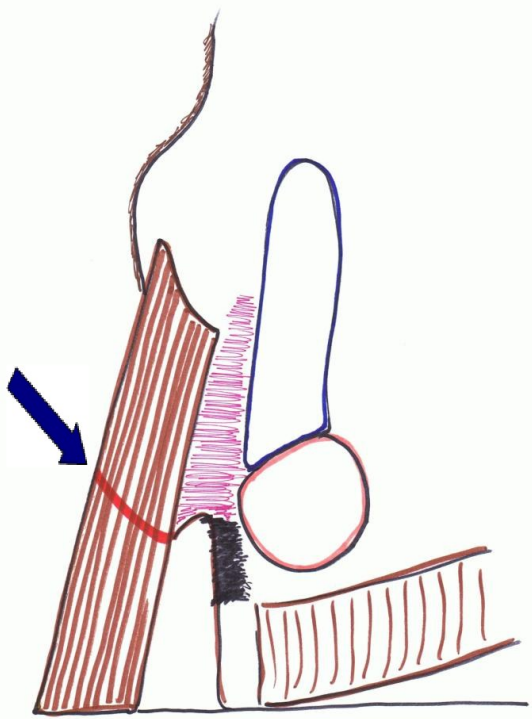
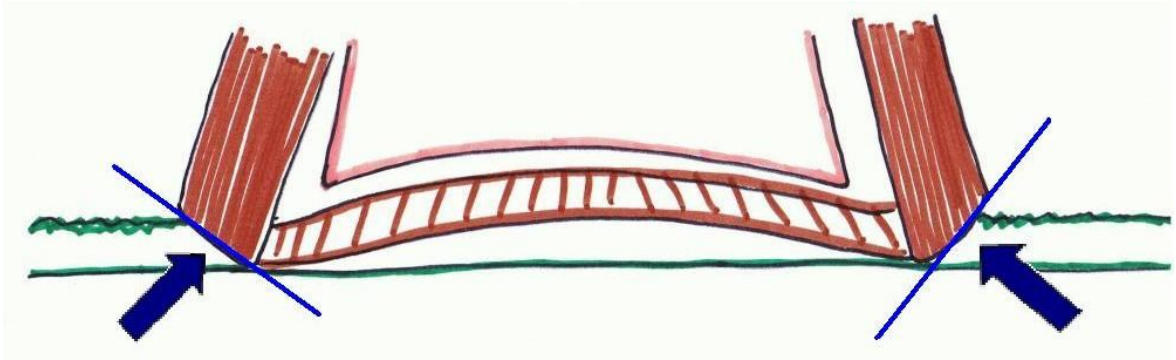


This action can only be performed if it does not contract the hoof.



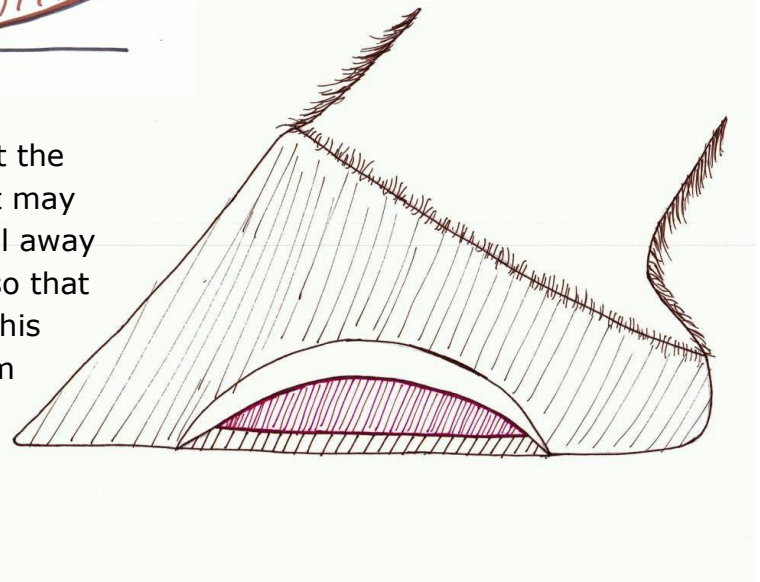
This will keep the lever forces off the hoof wall and actually push the hoof more together when making ground contact. But remember, you can only influence new growth with your trim. While this beveling will help the hoof come together, you have to be patient and allow the hoof to grow.

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This beveling will inevitably lead to a thinner hoof wall and you have to carefully judge how much bevel you can put on a hoof wall. All of this depends upon all over hoof balance, terrain and existing pathologies.

If the damage goes far past the level of the sole junction, it may be necessary to cut the wall away to expose the hollow area so that nothing can get packed in this area and the laminar corium can regenerate.





Pictures below: Farrier resected hoof wall to get rid of "White Line Disease". The real problem was the unphysiological lever force due to high heels. After the heel height was corrected the hoof grew out without separation in about 3 months.



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Pictures: HoofcareUnLtd., Dr. Hiltrud Strasser

Drawings: r.g photography



Flares

To avoid any confusion, let's talk about flares. White line separation and flares go hand in hand. In an unbalanced hoof you will have white line separation where the wall is over stressed. You will usually find that there is a counter part that is high in the hoof. For example the medial wall may be high and you experience the wall on the lateral side showing signs of white line separation or flaring. It does not help to just address the flare, you also need to address the imbalance.

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Medial left hind high, lateral left hind flared



Sole view of same hoof: Here you can see the flare/white line separation on the lateral side caused by the high medial wall. Judicious trimming and balancing paired with correct beveling will over time remedy this situation. Existing joint adaptation is your real enemy here



On page 3 of this lecture you have the same situation with a anterior/posterior imbalance (bottom picture). Some name this white line separation, others name it a flare. In any case it presents a lever that will always pull the wall to the outside and needs to be repeatedly addressed in order to bring the hoof into a state of balance where it can maintain itself correctly.